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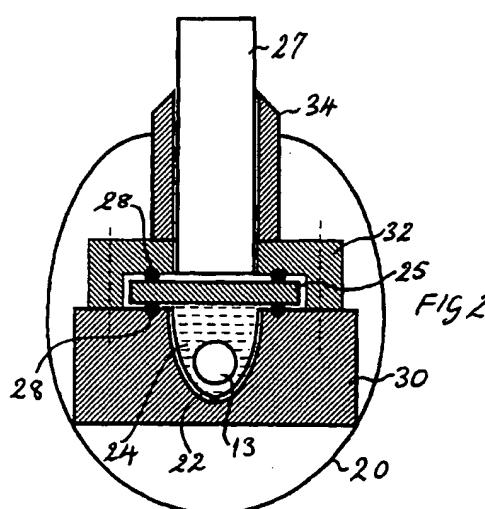
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## (54) Light pulse generating apparatus and cosmetic and therapeutic phototreatment

(57) Apparatus for therapeutic or cosmetic phototreatment comprises a flash lamp (13) and a lamp operating circuit. The lamp is cooled by water in contact with the lamp which acts as an infra-red filter to reduce skin burning. Light from the lamp reaches the skin through a light guide (27) which has a convex curved end to focus the light and to press away haemoglobin in the target area or has a concave end to reduce pres-

sure on the skin depending on the desired treatment. Relatively long and low power square shaped power pulses drive the lamp to produce light output pulses adapted to the relaxation time of the target structure to maximise the heating of the target whilst minimising heating of the skin surface. Target structures may be blood vessels or hair follicles. Automatic detection of a glass filter (25) may be provided.



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## EUROPEAN SEARCH REPORT

Application Number  
EP 98 30 4722

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.6)										
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim											
X A	DE 911 525 C (SEITZ) * the whole document * ---	6-9,27 1,2,4	A61N5/06										
X Y	DE 692 907 C (LÖNNE) * the whole document * ---	6-9,27 1,2,4,27											
D,Y	EP 0 565 331 A (ESC) 13 October 1993 * abstract * * column 5, line 33 - line 51 * ---	1,2,4,27											
X	EP 0 485 864 A (MAXS) 20 May 1992 * abstract * * column 1, line 1 - line 11 * * column 3, line 37 - line 42 * * column 4, line 43 * * column 5, line 11 * ---	6,27											
A	* column 5, line 11 * ---	1,7											
X	DE 38 03 763 A (VUGHT) 17 August 1989 * column 1, line 12 - line 66 * * column 2, line 14 - line 48; claims 2,3 * -----	10,12,27											
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)										
			A61N										
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>12 May 1999</td> <td>Taccoen, J-F</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	12 May 1999	Taccoen, J-F				
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THE HAGUE	12 May 1999	Taccoen, J-F											
<p>CATEGORY OF CITED DOCUMENTS</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">X : particularly relevant if taken alone</td> <td style="width: 33%;">T : theory or principle underlying the invention</td> </tr> <tr> <td>Y : particularly relevant if combined with another document of the same category</td> <td>E : earlier patent document, but published on, or after the filing date</td> </tr> <tr> <td>A : technological background</td> <td>D : document cited in the application</td> </tr> <tr> <td>O : non-written disclosure</td> <td>L : document cited for other reasons</td> </tr> <tr> <td>P : Intermediate document</td> <td>&amp; : member of the same patent family, corresponding document</td> </tr> </table>				X : particularly relevant if taken alone	T : theory or principle underlying the invention	Y : particularly relevant if combined with another document of the same category	E : earlier patent document, but published on, or after the filing date	A : technological background	D : document cited in the application	O : non-written disclosure	L : document cited for other reasons	P : Intermediate document	& : member of the same patent family, corresponding document
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Application Number

EP 98 30 4722

#### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

#### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

10,11,12,27

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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OfficeLACK OF UNITY OF INVENTION  
SHEET BApplication Number  
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

## 1. Claims: 1-9,27: Searched

Use of water as infra-red filter.

## 2. Claims: 10,11,27: Not searched

Light source including a light guide contacting the skin of a patient for photo-treatment, the light guide being shaped in a convex curve to reduce the amount of blood in the skin below the light guide.

## 3. Claims: 12,27:

Light source including a light guide contacting the skin of a patient for photo-treatment, the light guide being shaped in a concave manner to relieve pressure applied to the skin where blood is a target.

## 4. Claims: 13-17,27:

Apparatus producing a pulse of light during which light output pulse or pulse train lasts for at least 80% of the light output period

## 5. Claims: 18,27:

Apparatus comprising a filter adapted to pass only selected wavelengths comprising sensor means for detecting the presence and nature of said filter.

## 6. Claims: 19-26,27:

Apparatus for photo-treatment comprising a light source, said light source being adapted to produce a light flux of 250 J/cm<sup>2</sup> and said filter being a non-interference absorption filter.

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 98 30 4722

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
 The members are as contained in the European Patent Office EDP file on  
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12-05-1999

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 911525	C		NONE	
DE 692907	C		NONE	
EP 0565331	A	13-10-1993	IL 101547 A US 5405368 A CA 2093055 A DE 9321497 U FI 931608 A US 5626631 A US 5828803 A US 5755751 A US 5620478 A US 5720772 A	05-12-1996 11-04-1995 10-10-1993 20-08-1998 10-10-1993 06-05-1997 27-10-1998 26-05-1998 15-04-1997 24-02-1998
EP 0485864	A	20-05-1992	DE 9015721 U AT 118364 T DE 59104596 D ES 2069175 T	12-03-1992 15-03-1995 23-03-1995 01-05-1995
DE 3803763	A	17-08-1989	NONE	